CAR-4010 Series
Communication Appliance

User's Manual

Revision: 1.2

CASWELL Complete Your Solution
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TÜV CERT ISO 9001

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Chapter 1 Introduction

1.1 About This Manual

This manual contains all required information for setting up and using the CAR-4010 series.

CAR-4010 provides the essential platform for delivering optimal performance and functionality in the value communications appliance market segment. This manual should familiarize you with CAR-4010 operations and functions. CAR-4010 series provide up to four on-board Ethernet ports to serve communication applications like Firewall, requiring four Ethernet ports to connect external network (internet), demilitarized zone and internal network.

CAR-4010 series overview:

- Two proprietary PCIe2.0 extension slots
- Compatible with Caswell's 10G and 1G expansion modules with copper and fiber interface
- Support IntelR LGA1155 XeonR CPU
- Support One Expandable with 8 GbE ports (RJ45 or SFP)
- Support IPMI module
- 4 DIMMs DDR3 (Dual-channel)
- 5GT/s DMI data rate
- Intel total solution

1.2 Manual Organization

This manual describes how to configure your CAR-4010 system to meet various operating requirements. It is divided into three chapters, with each chapter addressing the basic concept and operation of this system.

Chapter 1: Introduction. This section describes how this document is organized. It includes brief guidelines and overview to help find necessary information.

Chapter 2: Hardware Configuration Setting and Installation. This chapter demonstrated the hardware assembly procedure, including detailed information. It shows the definitions and locations of Jumpers and Connectors that can be used to configure the system.

Chapter 3: Operation Information. This section provides illustrations and information on the system architecture and how to optimize its performance.

Any updates to this manual, would be posted on the web site: ***http://www.cas-well.com***

1.3 Technical Support Information

Users may find helpful tips or related information on Caswell's web site: ***http://www.cas-well.com*** A direct contact to Caswell's technical person is also available. For further support, users may also contact Caswell's headquarter in Taipei or local distributors.

Taipei Office Phone Number: +886-2-77058888

1.4 Board Layout

Figure 1-1 Board Layout of CAR-4010 M/B

1.5 System Block Diagram

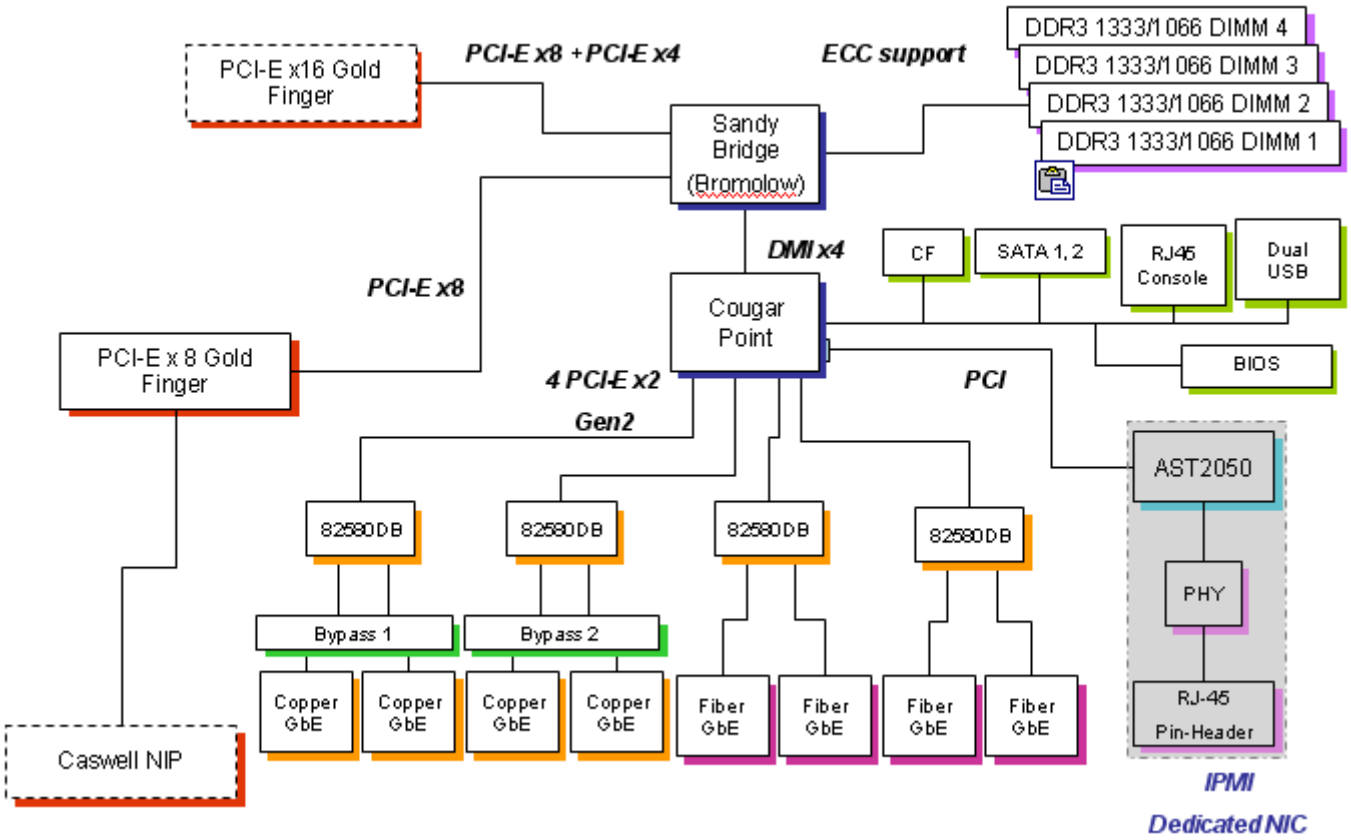


Figure 1-2 CAR-4010 Basic Block Diagram

1.6 Product Specifications

#	Feature	Detailed Description
1	System Description	CAR-4010 system series is 1 chip solution based on **Intel® Sandy Bridge processors and Intel® Cougar Point chipset** with optional configuration to meet market requirements.
2	CPU	Supports LGA 1155 Xeon® E3-series CPUs
3	CPU Board	◆ Intel® LGA1155 Xeon® E3-series CPU ◆ Intel® C206(Cougar Point) PCH with DMI 5GT/S
4	System Memory	◆ 4 DIMM slots ◆ Dual channel DDR3 with four 240-pin DIMM sockets ◆ Supports DDR3 1333/1066 up to 16 GB
5	Power Supply	◆ Optional 80Plus 250Wfull-range ATX. ◆ Optional 275W Redundant ◆ Optional 250W DC48V Input ◆ Full range ATX PSU with total 300~350W power output will be required (depends on power-budget). ◆ Power Budget: Refer to System Power Budget Table of sec. II-4. ERD should provide related data. ◆ AC On/Off switch is required. ◆ Certification: CE, UL, 3C ◆ Operating Mode: AT with power switch. ATX with power button.

<table>
<tr><th>#</th><th>Feature</th><th>Detailed Description</th></tr>
<tr><td></td><td></td><td>◆ Dimension: 1U single PSU – 81.5(W) x 150(D) x 40.5 (H) mm</td></tr>
<tr><td>6</td><td>Chassis</td><td>◆ Form factor: 1U rack-mount chassis with a (rear) supporting bracket (trail) system (kit).
◆ To accommodate: M/B, EZIO-G300/EZIO-G400, PSU, one 3.5” HDDs, advanced Ethernet I/O module (ABN-458, ABN-494, ABN-522…), PCI-E card which is connected through backplane.
◆ Chassis depth: 1U w/ single PSU <18”.</td></tr>
<tr><td>7</td><td>PCI-E Architecture</td><td>◆ One PCI-E x8 and one PCI-E x16(1 PCI-E x8 + 1 PCI-E x4) from Intel® Bromollow to on-board slot for directly connecting with proprietary PCI-E add-on modules (ABN-series).
◆ Four PCI-E x2 from Intel® Cougar Point</td></tr>
<tr><td>8</td><td>Ethernet</td><td>◆ 8 GbE RJ45 ports or 4 GbE RJ45 ports + 4 GbE SFP ports</td></tr>
<tr><td>9</td><td>Expansion slots</td><td>◆ 1 PCI-E x8 Golden Finger (Caswell interface) & 1 PCI-E x8 + 1 PCI-E x4 (Standard interface)</td></tr>
<tr><td>10</td><td>SATA Interfaces</td><td>◆ Two SATA Interfaces on board with lockable connectors (B6210691)</td></tr>
<tr><td>11</td><td>Storage</td><td>◆ HDD
– System is equipped default with fixed HDD
– Space for one 3.5” SATA HDD or two 2.5” SATA HDD is required.
◆ On board CF socket for CF card.</td></tr>
<tr><td>12</td><td>Power On/Off operation</td><td>◆ There should be an on/off switch on PSU itself or a separated on/off switch attached to PSU to turn the PSU on/off; this switch is for AT mode operation.
◆ There should be a toggle switch pin-header to allow ATX model operation.
◆ There is an “always on” item in the BIOS. System will be powered up automatically while power is resumed, if it is “on” before power failed.
◆ Customer can use OS command to shut down system power.
◆ More detailed Power on/off mode to be determined.</td></tr>
<tr><td>13</td><td>IPMI</td><td>◆ Reserve IPMI circuit via PCI interface</td></tr>
<tr><td>14</td><td>Front Panel</td><td>◆ 1 Power LED
◆ 1 HDD Status LED
◆ 2 Bypass LED
◆ 1 Power button
◆ 1 F/D button
◆ 1 RJ45 console
◆ 2 USB 2.0 ports
◆ LCD Module (Options from 1 of EZIO-300/400/G500 types)
◆ 4 RJ45 LAN ports (Serial number from left to right #0, 1, 2, 3) + 4 SFP LAN ports (Serial number from left to right #4, 5, 6, 7) or 8 RJ45 LAN ports (Serial number from left to right #0, 1, 2, 3, 4, 5, 6, 7)</td></tr>
<tr><td>15</td><td>Rear Panel</td><td>◆ PSU (Power Inlet & PSU FAN)
◆ 3 System FAN
◆ Reservation for expansion port.</td></tr>
<tr><td>16</td><td>Chassis Color</td><td>Standard Pantone Black-UC</td></tr>
<tr><td>17</td><td>Dimension</td><td>438mm(W) x 508mm (D) x 44mm (H)</td></tr>
<tr><td>18</td><td>Environmental requirement</td><td>
<table>
<tr><th></th><th>Operating</th><th>Storage</th><th>Transportation</th></tr>
<tr><td>Acoustics</td><td>< 55dB</td><td>--</td><td>--</td></tr>
<tr><td>Temperature</td><td>0°C to 40°C</td><td>-20°C to 75°C</td><td>--</td></tr>
<tr><td>Relative Humidity</td><td>20 to 90% RH</td><td>5 to 95% RH</td><td></td></tr>
<tr><td>Shock</td><td>0.5 Sine shock, 10G peak, 10 +/- 3 ms on one axis</td><td></td><td>0.5 sine shock, 50G peak on each surface.</td></tr>
<tr><td>Vibration</td><td>0.25G (Peak) / 5~500 Hz, 15 sec at each of 3 axis.</td><td>1.5G / 5~200 Hz at each of 3 axis.</td><td></td></tr>
</table>
</td></tr>
</table>

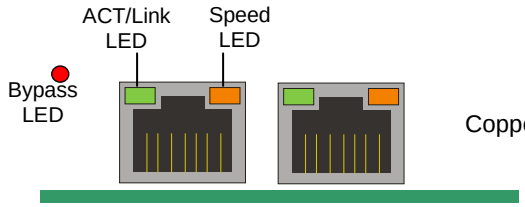
1.7LED Signaling Standard

1. Power and Data-access LED

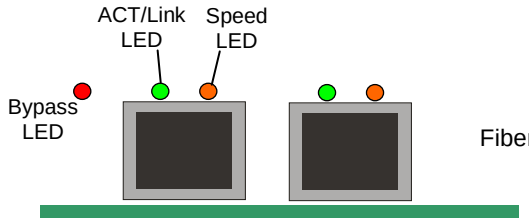
Lettering	Symbol	Function	Color	Signaling
PWR		Power status	Green	Off – No power, system off. On – Power good, system on.
Data Access		Data Access	Red	Off – no data access through IDE or SATA channel On – data is in transition through IDE or SATA channel

2. Ethernet LED

Label	Color	Indication	Status
ACT/LINK	**Green**	**On**	1. The Ethernet port is receiving power. 2. Good linkage between the Ethernet port and its supporting hub.
		Off	1. The adapter and switch are not receiving power. 2. No connection between both ends of network cable. 3. The drivers of Ethernet have not been loaded or does not function correctly.
	Green	**Flashing**	The adapter is sending or receiving network data. The frequency of the flashes varies with the amount of network traffic.
SPEED	**Yellow**	**On**	ACT/LNK LED must on then this LED show the operating at 1000 Mbps. If ACT/LINK is off and this function will be disable.
	Green	**On**	ACT/LNK LED must on then this LED show the operating at 100 Mbps. If ACT/LINK is off and this function will be disable.
		Off	ACT/LNK LED must on then this LED show the operating at 10 Mbps. If ACT/LINK is off and this function will be disable.



Copper Ethernet Interface



Fiber/SFP Ethernet Interface

3. SFP LED indicator

Label	Color	Indication	Status
ACT/LINK	Green Or Others	On	1. The Ethernet port is receiving power. 2. Good linkage between the Ethernet port and its supporting hub.
		Off	1. The adapter and switch are not receiving power. 2. No connection between both ends of network cable. 3. The drivers of Ethernet have not been loaded or does not function correctly.
		Flashing	The adapter is sending or receiving network data. The frequency of the flashes varies with the amount of network traffic.

4. Bypass LED

LED Status	green	red	off
Bypass Mode/Status	normal mode	bypass mode, triggered by WDT expiring	power off, in normal or bypass mode which is defined by customer

Chapter 2 Getting Started

This section describes how the hardware installation and system settings should be done.

2.1 Included Hardware

The following hardware is included in package:

- CAR-4010 Communication Appliance System Board
- One null serial port cable

2.2 Before You Begin

To prevent damage to any system board, it is important to handle it with care. The following measures are generally sufficient to protect your equipment from static electricity discharge:

When handling the board, use a grounded wrist strap designed for static discharge elimination and touches a grounded metal object before removing the board from the antistatic bag. Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

When handling processor chips or memory modules, avoid touching their pins or gold edge fingers. Restore the communications appliance system board and peripherals back into the antistatic bag when they are not in use or not installed in the chassis.

Some circuitry on the system board can continue operating even though the power is switched off. Under no circumstances should the Lithium battery cell used to power the real-time clock be allowed to be shorted. The battery cell may heat up under these conditions and present a burn hazard.

WARNING!

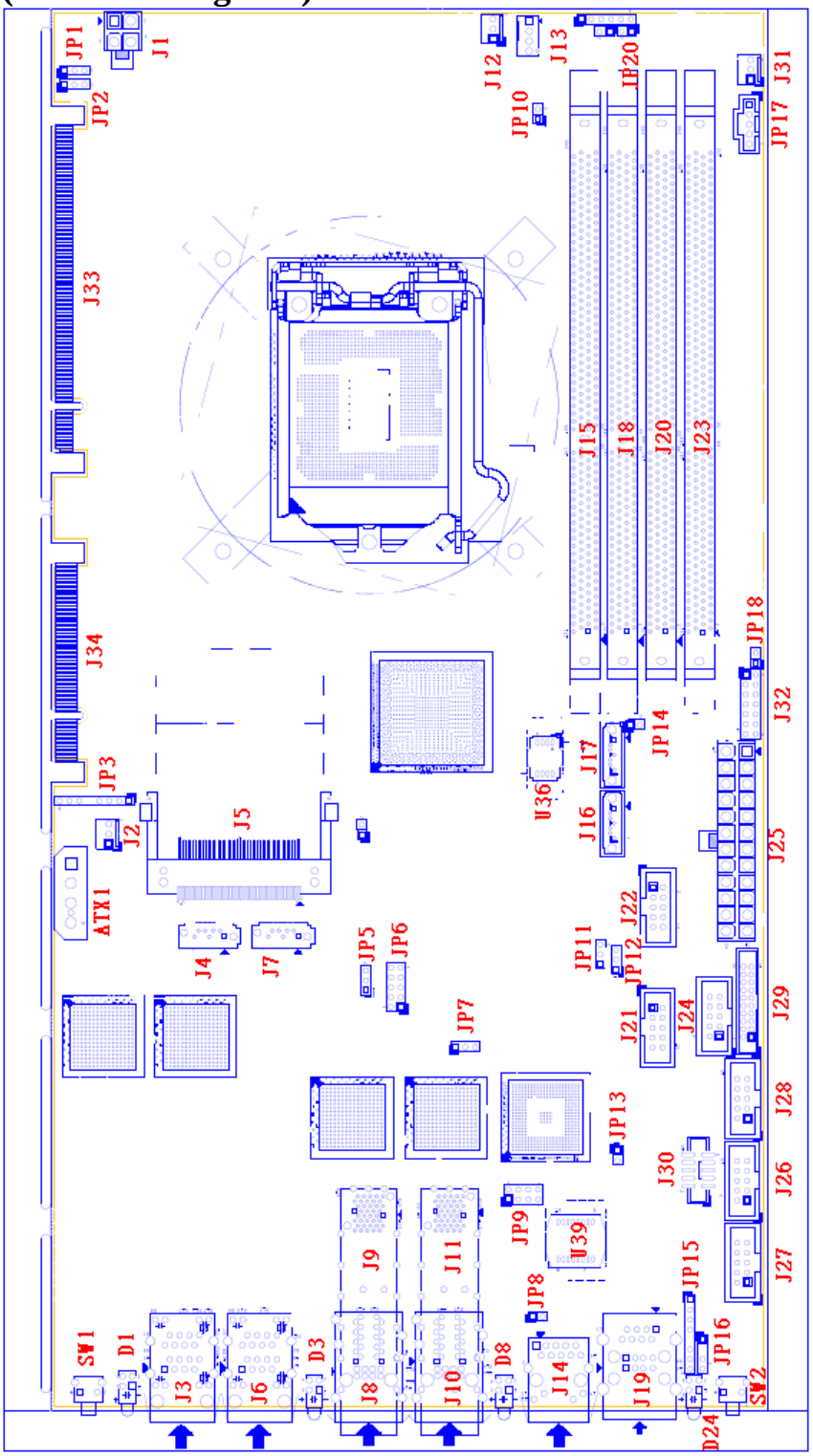
1. **"CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS"**
2. **This guide is for technically qualified personnel who have experience installing and configuring system boards. Disconnect the system board power supply from its power source before you connect/disconnect cables or install/remove any system board components. Failure to do this can result in personnel injury or equipment damage.**
3. **Avoid short-circuiting the lithium battery; this can cause it to superheat and cause burns if touched.**
4. **Do not operate the processor without a thermal solution. Damage to the processor can occur in seconds.**
5. **Do not block air vents. Minimum 1/2-inch clearance required.**

2.3.1 CAR-4010 System Board Jumper

In general, jumpers on CAR-4010 system board are used to select options for certain features. Some of the jumpers are configurable for system enhancement. The others are for testing purpose only and should not be altered. To select any option, cover the jumper cap over (Short) or remove (NC) it from the jumper pins according to the following instructions. Here NC stands for “Not Connected”.

Jumper settings and connector functions

(default setting:”★”)



Connector	Function	Remark
J1	ATX 2x2P +12V Power Connector	
J2、J12、J31	SYS FAN Connector	
J3、J6、J8、J10	RJ45 2x1 Connector	
J4、J7	SATA3 Connector	
J5	CF Connector	
J9、J11	Fiber Cage 2x1 Connector	
J13	CPU FAN Connector	
J14	RJ45 Connector For IPMI	
J15、J18、J20、J23	DDR3 Memory Slot	
J16、J17	SATA2 Connector	
J19	RJ45(Console) + USBx2 Connector	
J21	IPMI VGA Header	
J22	PCH VGA Header	
J24	KB + MS Header	
J25	ATX 24P Power Connector	
J26	COM Header	
J27	USB Header	
J28	Debug(80 port) Header	
J29	TPM Header	
J30	EZIO Connector	
J32	Reserve Header	
J33	PCIE x16 Golden Finger	
J34	PCIE x8 Golden Finger	
JP1、JP2	Digital Vcore Power(CHiL) Debug/Program Only Header	
JP3	CPLD Header For Bypass	
JP5	VCC(+5V) or VCC3(+3.3V) Jumper Select For 8-bit GPIO Header	
JP6	8-bit GPIO Header	
JP7	CMOS Clear Header	
JP8	ICMB_SW Header For IPMI	
JP9	ICMB_485 & IPMB_SMB For IPMI	
JP10	VCCSA_VID Control Header	
JP11	Protected RTC Jumper Header	
JP12	Configure / Recovery Jumper Header	
JP13	2050_ROMA Jumper Header For IPMI	
JP14	Watch Dog Timer(WDT) Select Header	
JP15	CPLD Header For IPMI	
JP16	RS-232 BMC Header For IPMI	
JP17	External SM BUS Header	
JP18	PWRSW Header	
JP20	New Auto-Power-On Programming Header For MPU	
D1	Bypass LED	
D3、D8	Fiber LED	

D24	Power status & HDD LED	
U36	SPI Flash Socket For BIOS	
U39	SPI Flash Socket For IPMI	
SW1	Power Button Switch	
SW2	Default Switch	
ATX1	+5V & +12V Power Connector(only output)	

■ J1 : ATX 2x2P +12V Power Connector definition

Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

■ J2、J12、J31 : SYS FAN Connector definition

Pin	Signal Name
1	GND
2	+12V
3	FAN SPEED IN

■ J4、J7、J16、J17 : SATA Connector definition

Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

■ J5 : CF Connector definition

PIN	Signal Name	PIN	Signal Name
1	Ground	2	Data 3
3	Data 4	4	Data 5
5	Data 6	6	Data 7
7	SDCS#0	8	Ground
9	Ground	10	Ground
11	Ground	12	Ground
13	+5V	14	Ground
15	Ground	16	Ground
17	Ground	18	SA2
19	SA1	20	SA0
21	Data 0	22	Data 1

23	Data 2	24	NC
25	NC	26	NC
27	Data 11	28	Data 12
29	Data 13	30	Data 14
31	Data 15	32	SDCS#3
33	Ground	34	IOR#
35	IOW#	36	WE#
37	INT	38	+5V
39	Ground	40	NC
41	RESET#	42	IORDY
43	NC	44	REQ
45	IDEACT#	46	PDIAG#
47	Data 8	48	Data 9
49	Data 10	50	Ground

■ J13 : CPU FAN Connector definition

Pin	Signal Name
1	GND
2	+12V
3	FAN SPEED IN
4	NC

■ J21、J22 : IPMI & PCH VGA Header definition

Pin	Signal Name	Pin	Signal Name
1	RED	2	DDCCLK
3	GREEN	4	Ground
5	BLUE	6	DDCDATA
7	VSYNC	8	Ground
9	HSYNC	10	N/C

■ J24 : KB + MS Header definition

Pin	Signal Name	Pin	Signal Name
1	Mouse DAT	2	Keyboard DAT
3	NC	4	NC
5	GND	6	GND
7	+5V	8	+5V
9	Mouse CLOCK	10	Keyboard CLOCK

■ J26 : COM Header definition

Pin	Signal Name	Pin	Signal Name
1	DCD#	2	DSR#
3	RXD#	4	RTS#
5	TXD#	6	CTS#
7	DTR#	8	RI#
9	GND	10	NC

■ J27 : USB Header definition

Pin	Signal Name	Pin	Signal Name
1	GND	2	+5V
3	GND	4	USB-
5	USB+	6	USB+
7	USB-	8	GND
9	+5V	10	GND

■ J28 : Debug(80 port) Header definition

Pin	Signal Name	Pin	Signal Name
1	LAD0	2	+3.3V
3	LAD1	4	RESET#
5	LAD2	6	LFRAME#
7	LAD3	8	CLOCK
9	NC	10	GND

■ J29 : TPM Header definition

Pin	Signal Name	Pin	Signal Name
1	CLOCK	2	GND
3	LFRAME#	4	NC
5	RESET#	6	+5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	NC	14	NC
15	+3VSB	16	SERIRQ
17	GND	18	NC
19	LPCPD#	20	LDRQ#1

■ JP5 : VCC or VCC3 Jumper Select For 8-bit GPIO Header definition

Pin	Function
1-2 Short	VCC(+5V)
2-3 Short	VCC3(+3.3V)

■ JP6 : 8-bit GPIO Header definition

Pin	Signal Name	Pin	Signal Name
1	GPIO30	2	GPIO34
3	GPIO31	4	GPIO35
5	GPIO32	6	GPIO36
7	GPIO33	8	GPIO37
9	Ground	10	+5V or +3.3V ( )(Control by JP5)

■ JP7 : CMOS Clear Header definition

Pin	Function
1-2 Short	Normal Operation
2-3 Short	Clear CMOS Contents

■ JP8 : ICMB_SW Header For IPMI definition

Pin	Function
1-2 Short	Mux to ICMB
1-2 Open	Mux to Debug Port

■ JP11 : Protected RTC Jumper Header definition

Pin	Function
1-2 Short	Normal
2-3 Short	Clear RTC

■ JP12 : Configure / Recovery Jumper Header definition

Pin	Function
1-2 Short	Normal
2-3 Short	Configure
Open	Recovery

■ JP14 : Watch Dog Timer(WDT) Select Header definition

Pin	Function
1-2 Short	Enable WDT Function
1-2 Open	Disable WDT Function

■ JP17 : External SM BUS Header definition

Pin	Signal Name
1	SMB_CLOCK
2	SMB_DATA
3	SMBALERT#
4	GND
5	+3.3V

■ JP18 : Power Switch Header definition

Pin	Function
1-2 Short	Power On
1-2 Open	Power Off

■ JP20 : New Auto-Power-On Programming Header For MPU definition

Pin	Function
1-2 , 3-4 Short	Normal

2.4 The Chassis

The system is integrated in a customized 1U chassis (***Fig. 2-1, Fig. 2-2***). On the front panel you will find, eight LAN ports, two USB ports and a COM port.

Fig. 2-1 *Front view of the chassis*

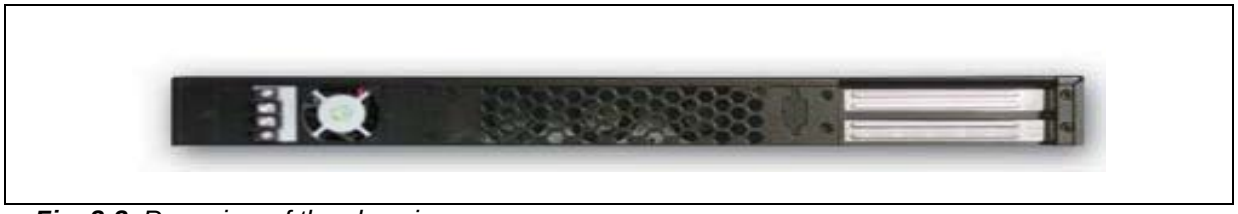


Fig. 2-2 *Rear view of the chassis*

2.5 Open the Chassis

1. Loosen the 6 screws of the chassis, two on each side and the rest two on the back, to remove the top lead (***Fig. 2-3***).

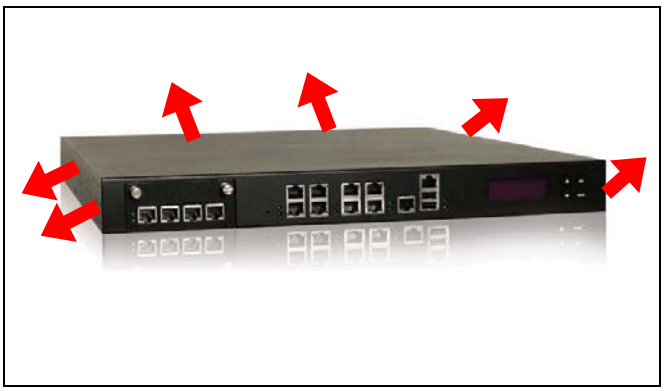


Fig. 2-3 *Take off screws*

2. The top lead (***Fig. 2-4***) can be removed from the base stand (***Fig. 2-5***).

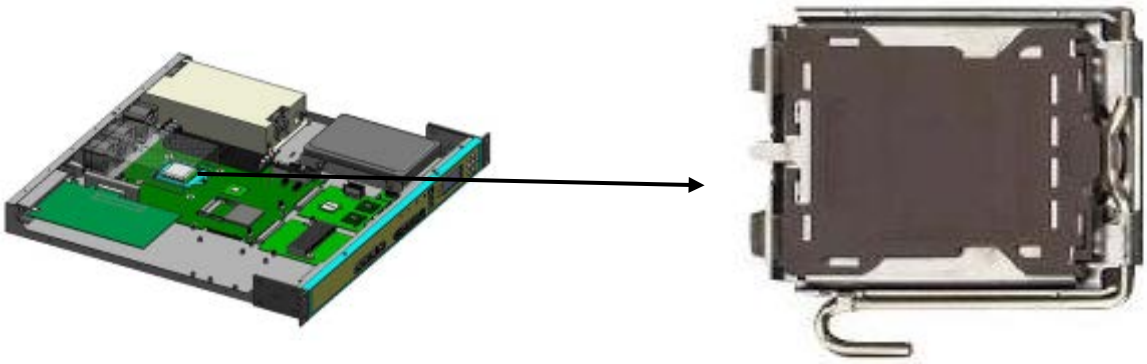
Fig. 2-4 *The top lead*

Fig. 2-5 *The base stand*

2.6 Install a Different Processor

To install a CPU

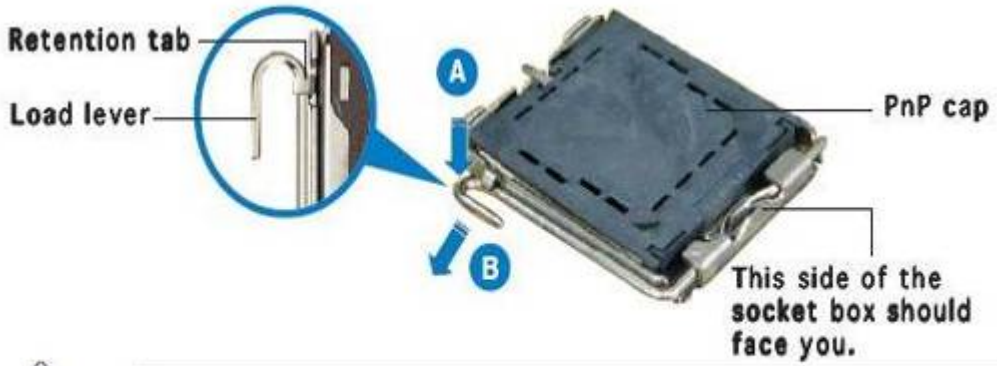
1. Local the CPU socket on the motherboard



CPU socket 1156

Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

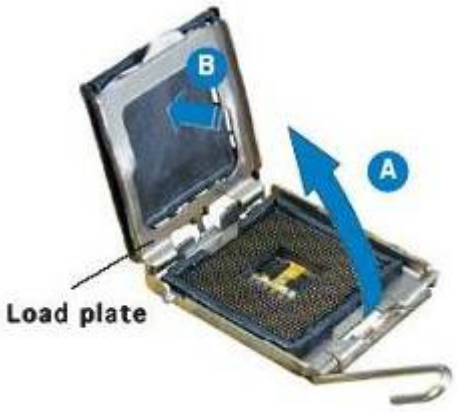
2. Press the load lever with your thumb (A), then move it to left (B) until it is released from the retention tab



To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

3. Lift the load lever in the direction of the arrow to a 135° angle

4. Lift the load plate with your thumb and forefinger to a 100° angle (A), then push the PnP cap from the load plate window to remove (B)



5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket. The socket alignment key should fit into the CPU notch

6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab

The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

Configure Processor Speed

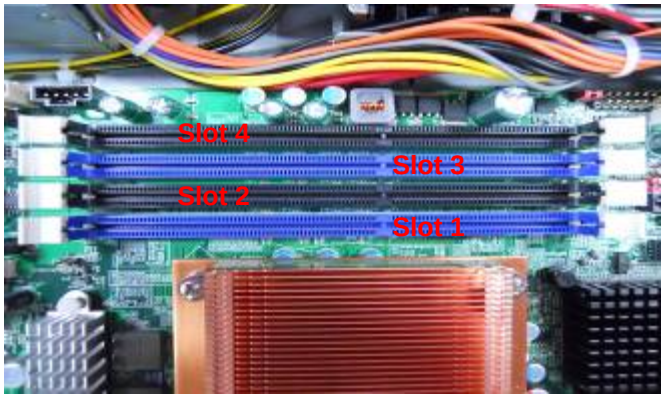
The system was designed to self-detect its CPU speed. So it does not require any system adjustment.

2.7 Remove and Install DIMM

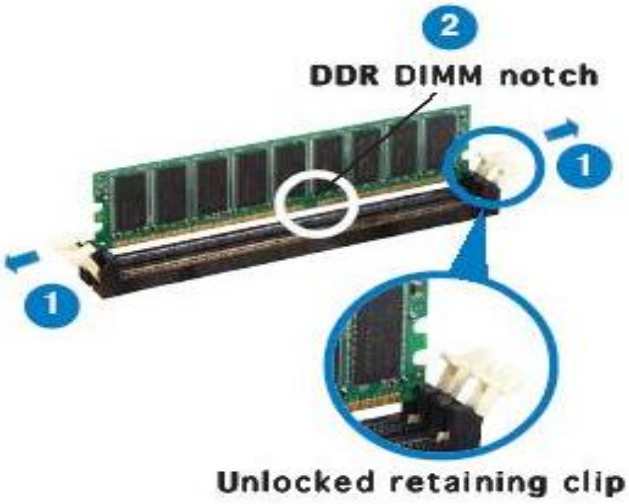
Follow these steps to upgrade RAM module:

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Installs DIMM based on the Slot order

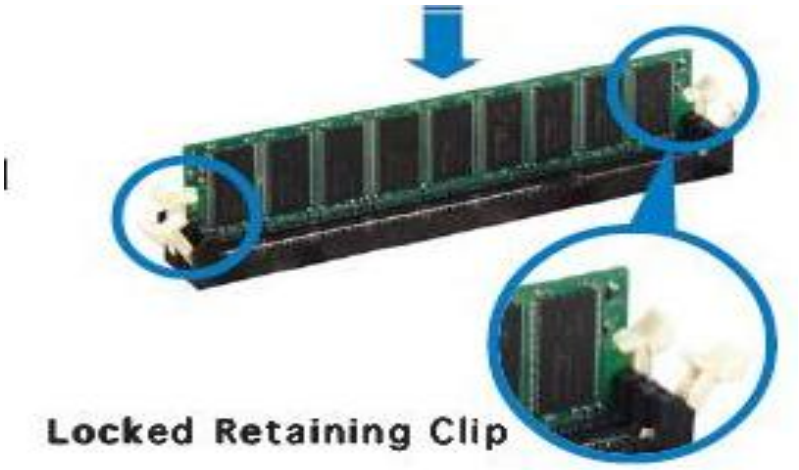


2. Unlock a DIMM socket by pressing the retaining clips outward
3. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket



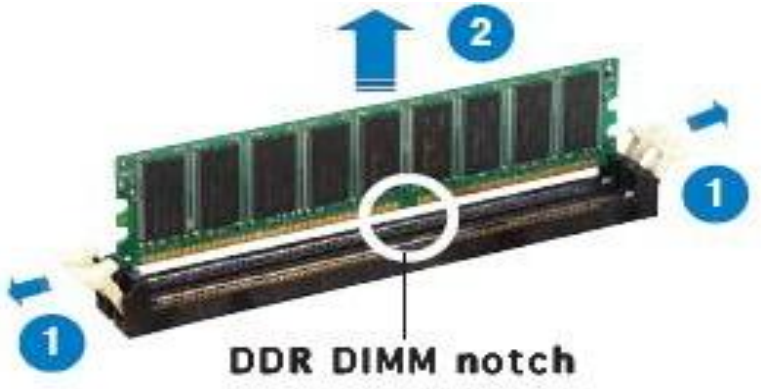
A DDR DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

4. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated



Follow these steps to remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM



2. Remove the DIMM from the socket

2.8 Remove and Install Compact Flash Card

1. Insert the Compact Flash Card into the CF interface

Compact Flash Card

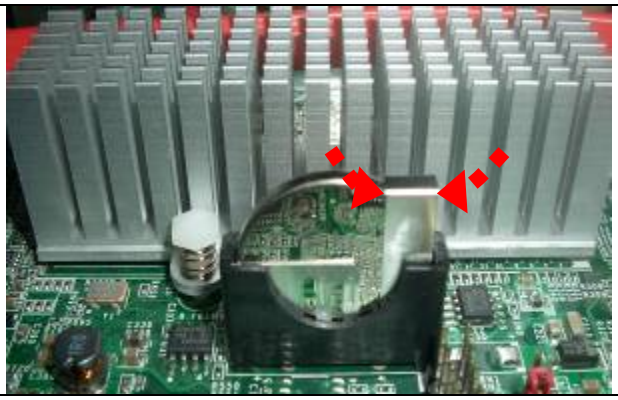
Insert Compact Flash Card into the CF interface

2. The completed installation of Compact Flash Card is shown as

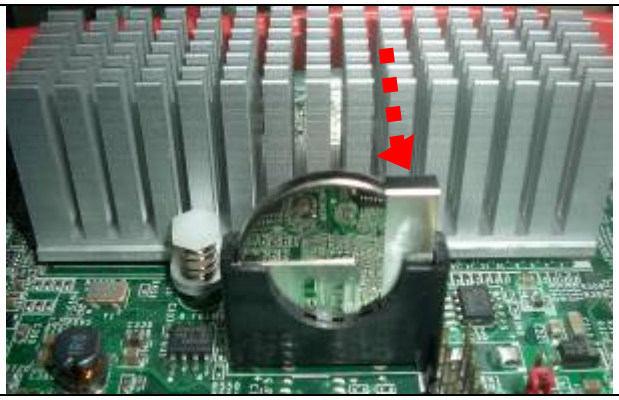
Completion of Compact Flash Card connection

2.9 Remove and Install Battery

1. Press the metal clip back to eject the button battery
2. Replace it with a new one by pressing the battery with fingertip to restore the battery



Eject the battery



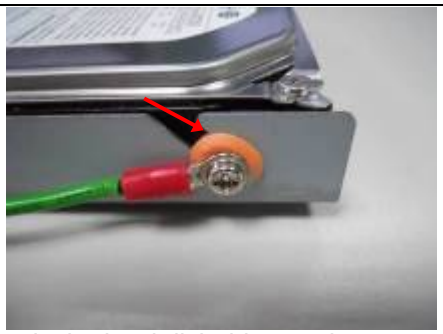
Restore the battery

2.10 Install HDD

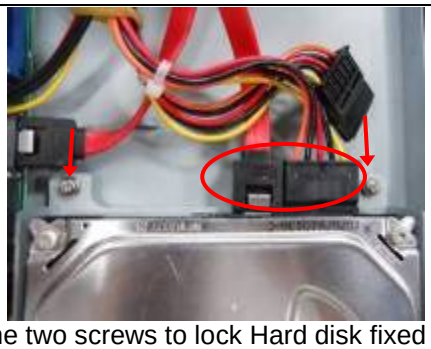
The system has an internal drive bay for one 3.5" SATA hard disk drive. If the HDD is not pre-installed, you can install it by yourself. Follow the steps below to install the HDD:

3.5”HDD Kit

Fix the hard disk drive on the HDD Bracket with four screws.

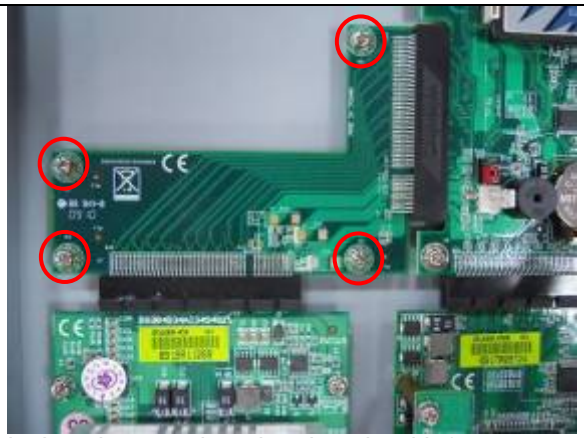


Fix the hard disk drive on the HDD Bracket with four screws.



Fasten the two screws to lock Hard disk fixed plate and chassis, Connect Power cable and HDD cable to CAR-4010 system board

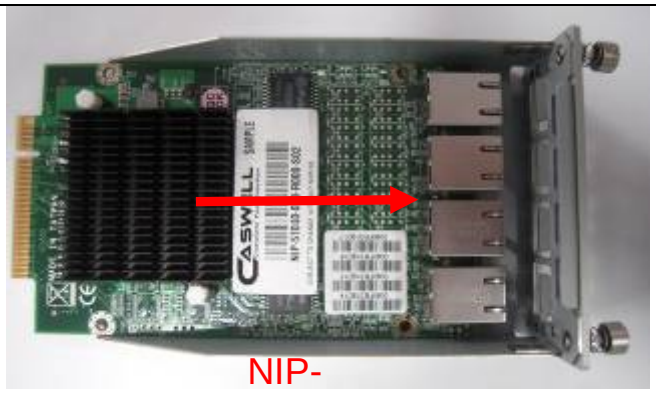
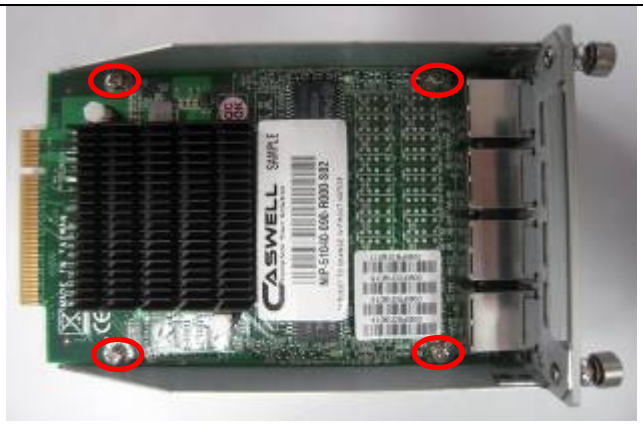
2.11 Install And-on Card



Fix the Riser Card on the chassis with four screws.

The system is equipped with one LAN module bays.

1. Remove the LAN module tray out.
2. Place the LAN module into the tray making sure the connector side of the module is at the rear side of the tray.
3. Use the provided screws to secure the module in place.
4. Slide the tray back into the bay.

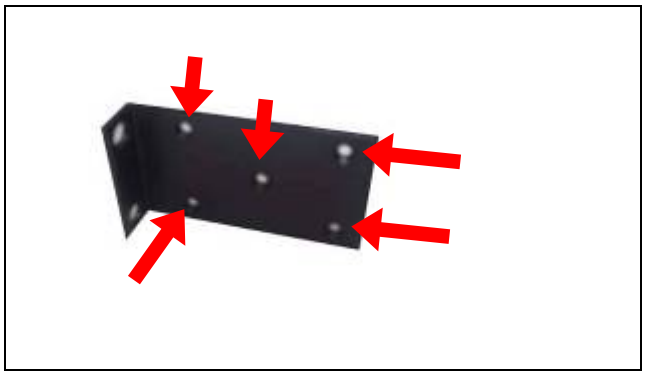
NIP-51040 kit	First use the screws to lock the LAN module panel on bracket.
	
Put the LAN module on bracket and flat push the module to screw fixed.	The LAN module is on fixed then locks the screws.

<table>
<tr><td> </td><td> </td></tr>
<tr><td colspan="2">Remove the tray from the bay.</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td>Put the LAN module into the bay.</td><td>And then lock the LAN module on the bay.</td></tr>
</table>

2.12 Ear Mount Kit Installation

The CAR-4010 series shipped with 2 ear mount kits. The following is the installation instruction of these ear mounts:

1. Take out the L shape ear mount kits. One ear mount fits on one side of the chassis,
2. Placing the side with four holes agonists the chassis and the side with two holes face outward.
3. Fasten five screws on each side



Fasten the screws to the side

2.13 Remove EZIO / LCD

The CAR-4010 series support EZIO modules. The following is the remove instruction of these EZIO/LCD modules:

1. Remove all cables from EZIO

Fig.2-14 *Remove the cable from EZIO*

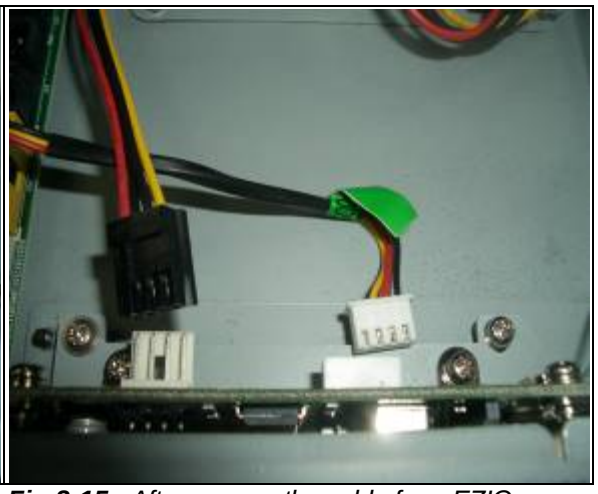


Fig.2-15 *After remove the cable from EZIO*

2. Remove the screws from chassis.

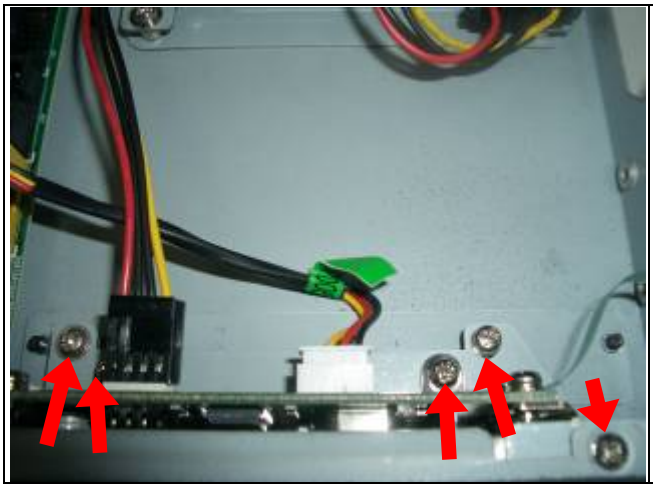


Fig.2-16 *Remove the screws from EZIO*

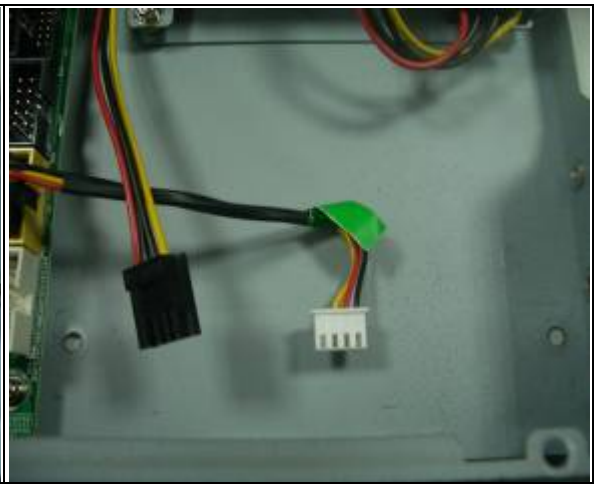


Fig.2-17 *Remove screws from chassis.*

EZIO

2.14 Remove Power Supply

The following is the remove step instruction of power supply.

1. Remove all power cables from main board.
2. Remove the screws from PSU

Remove all cables from board

Remove all cables from board

Remove the screws from PSU

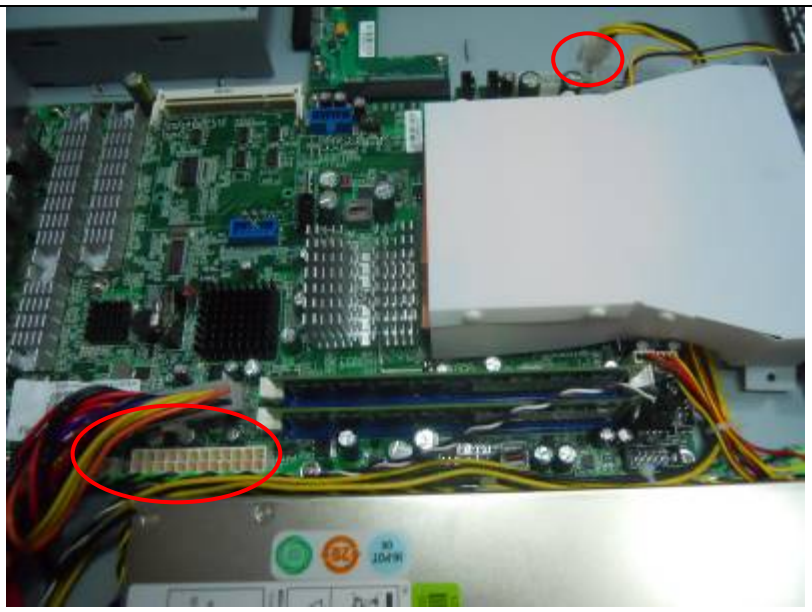
Remove the screws from PSU

Complete remove power supply

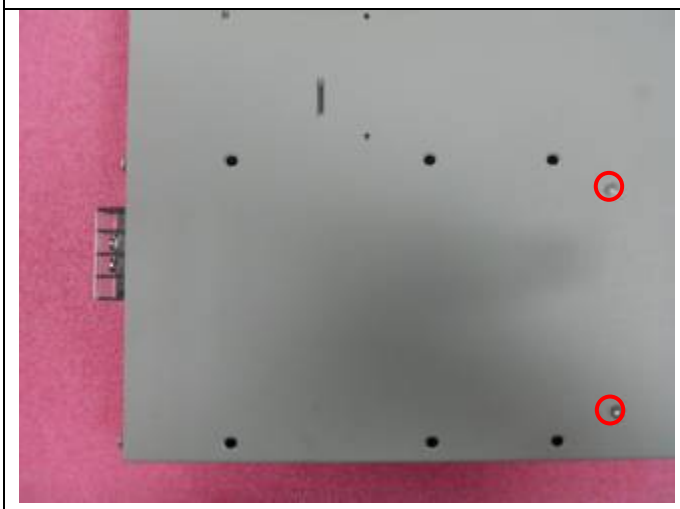
2.15 Remove DC Power Supply

The following is the remove step instruction of power supply.

1. Remove all power cables from main board.
2. Remove the screws from PSU



Remove all cables from board



Remove the screws from PSU

##When install DC PSU. Only allow qualified persons to install CAR-4010 with DC power by the rules of NEC code.

(a) 14AWG rolling green/yellow earthing wire shall be screwed together with a hex nut and Spring or Star washer to a bolt in the metal enclosure.
(b) Installation sequence => considered clause 2.6.5.3 (Please note that must connect ground first before connect positive or negative)
(c) If want remove DC PSU module please follow step as below:
1. Turn off DC power supply
2. All equipment must be off and then remove power cables from CAR-4010 by screwdriver.

(d) For DC power supply:
- The DC power supply cable shall be used with UL approved (14AWG min.) and suitable terminals or UL approved wire connector.
- The Circuit Breaker provide to DC PSU with rating 20A, -36V ~ -72V.

Note1: Switching or disconnecting devices shall not be in the earthed circuit conductor between the d.c. source and the point of connection of the earthing electrode conductor.
Note2: This product is used in Restricted Access Location and most people cannot be used, must be installed by a technician persons or qualified persons.
Note3: Installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.

2.16 Remove main board

The following is the remove step instruction of main board.

1. Remove all cables and heatsink from main board.
2. Remove all screws from main board.

Remove all cables and heatsink from main board

Complete remove main board

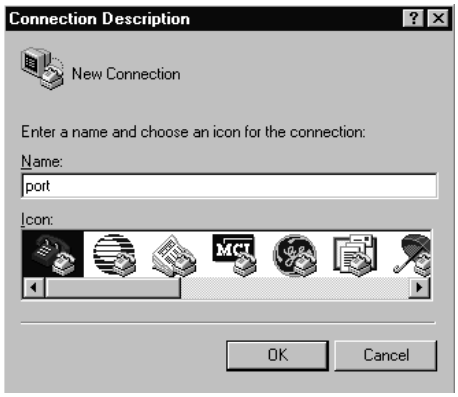
Connection Using Hyper Terminal

If users use a headless CAR-4010 system, which has no mouse/keyboard and VGA output connected to it, the console may be used to communicate with CAR-4010.

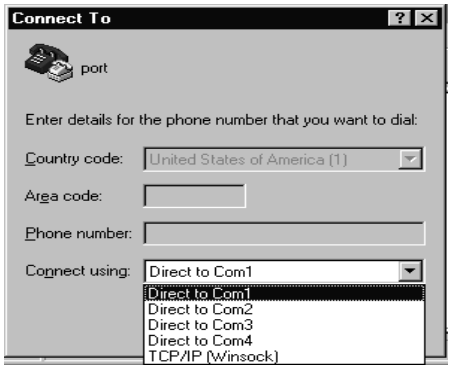
To access CAR-4010 via the console, Hyper Terminal is one of many choices. Follow the steps below for the setup:

Note: Terminal software may need to update for correct console output.

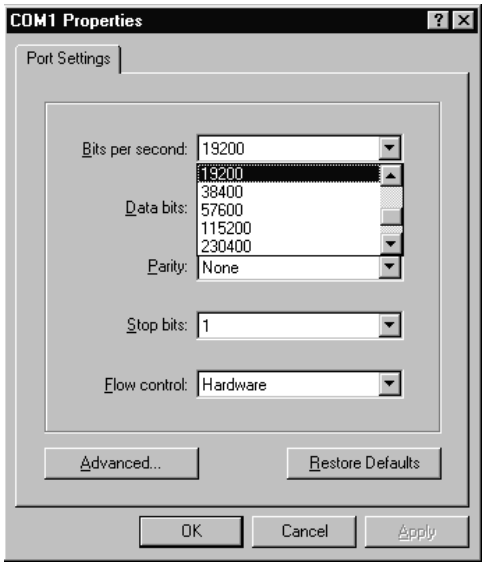
1. Execute HyperTerminal under C:\Program Files\Accessories\HyperTerminal
2. Enter a name to create new dial



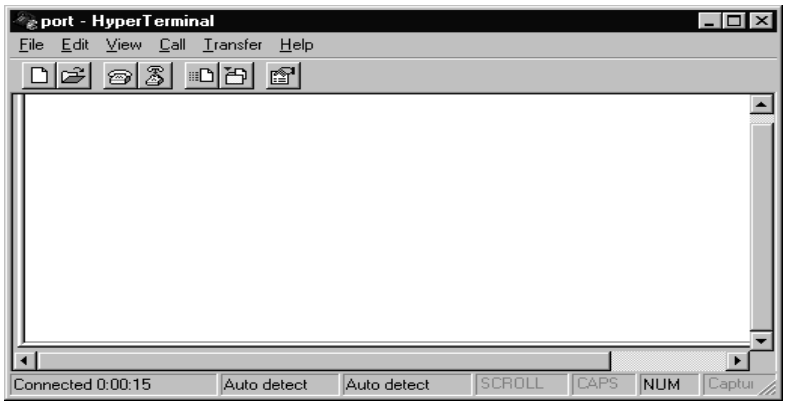
3. For the connection settings, make it Direct to Com1.



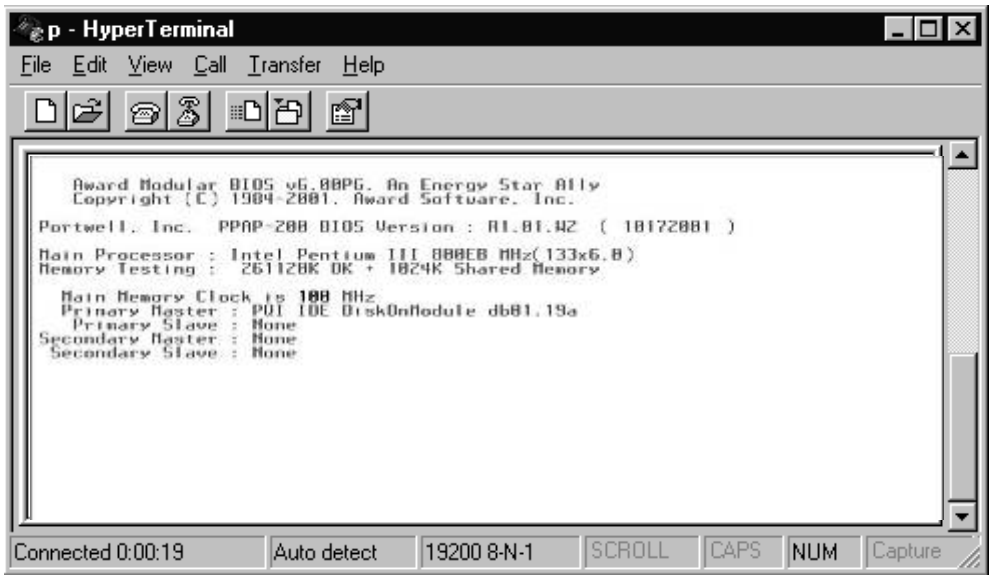
4. Please make the port settings to Baud rate 19200, Parity None, Data bits 8, Stop bits 1



5. Turn on the power of CAR-4010 system, after following screen was shown:



6. You can then see the boot up information of CAR-4010.


p - HyperTerminal
File Edit View Call Transfer Help
Award Modular BIOS v6.00PG, An Energy Star Ally
Copyright (C) 1984-2001, Award Software, Inc.
Portwell, Inc. PPAP-200 BIOS Version : A1.01.W2 (10172001)
Main Processor : Intel Pentium III 800EB MHz(133x6.0)
Memory Testing : 261120K OK + 1024K Shared Memory
Main Memory Clock is 100 MHz
Primary Master : PCI IDE DiskOnModule db01.19a
Primary Slave : None
Secondary Master : None
Secondary Slave : None
Connected 0:00:19
Auto detect
19200 8-N-1
SCROLL
CAPS
NUM
Capture

7. When message “Hit <DEL> if you want to run Setup” appear during POST, after turning on or rebooting the computer, press **<Tab>** key ***immediately*** to enter BIOS setup program.

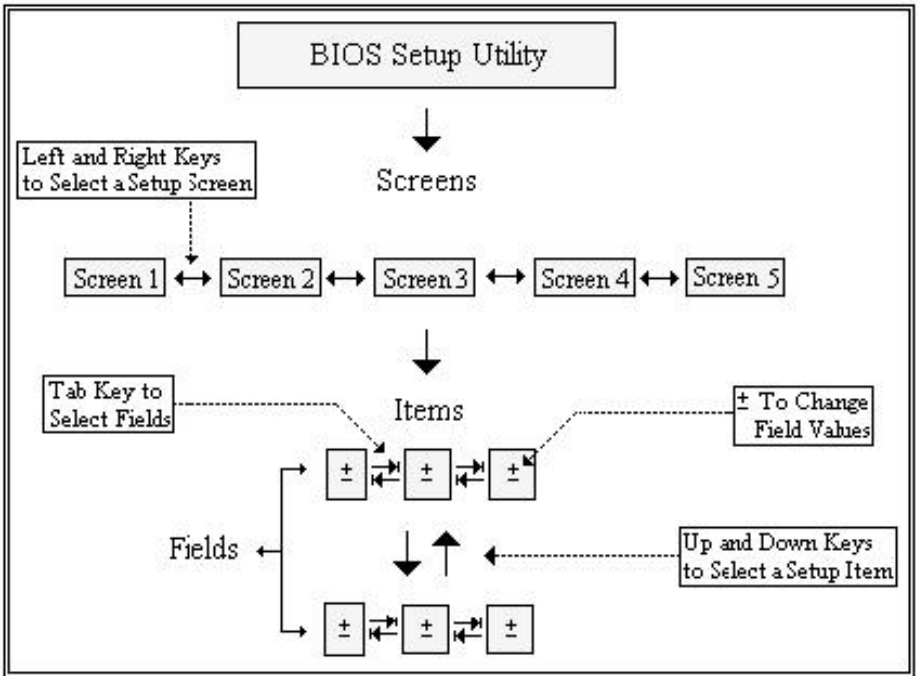
This is the end of this section. If the terminal did not port correctly, please check the previous steps.

Chapter 3 BIOS Setting

BIOS Setup Information

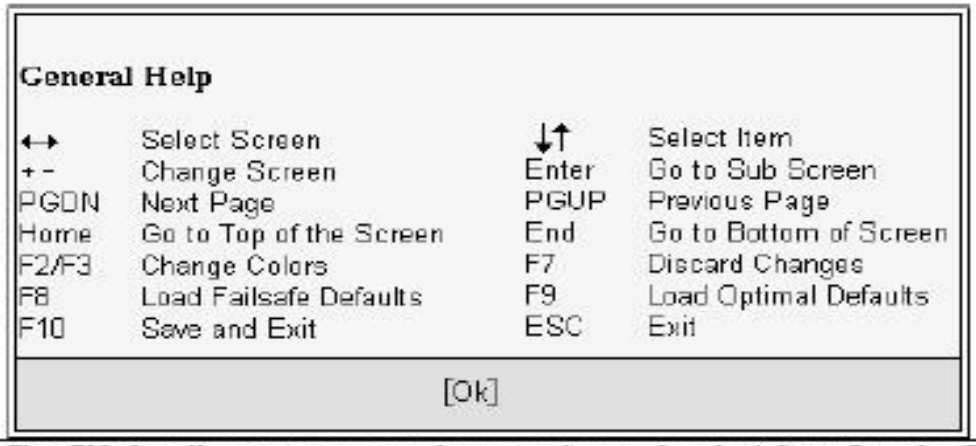
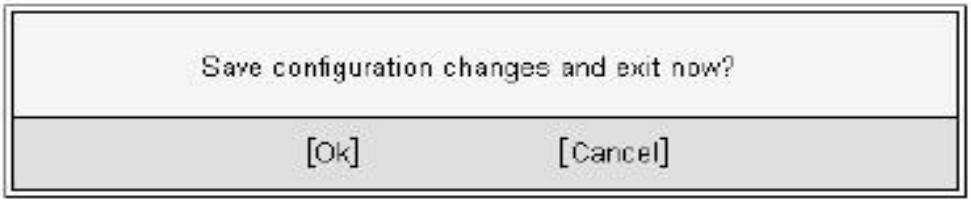
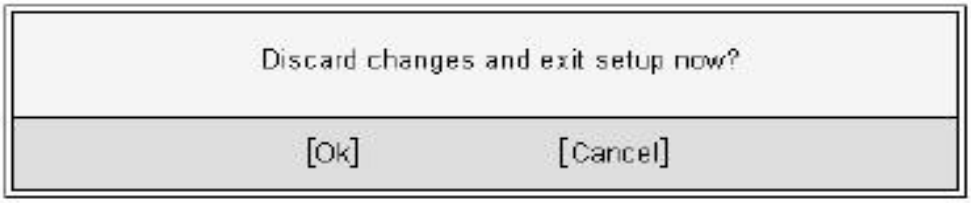
Power on the system, press the <Del> to run BIOS setup. After press the <Delete> key, the main BIOS setup menu displays. User can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.



Control Keys

Key	Function
↑↓Up /Down	The *Up and Down* <Arrow> keys allow user to select a setup item or sub-screen.
→ ← Left/Right	The *Left and Right* <Arrow> keys allow user to select a setup screen. For example: Main screen, Advanced screen, Chipset screen, and so on.
+ - Plus/ Minus	The *Plus and Minus* <Arrow> keys allow user to change the field value of a particular setup item. For example: Date and Time.
Tab	The <Tab> key allows user to select setup fields.

Hot Key	Description
F1	The <F1> key allows you to display the *General Help screen*. Press the <F1> key to open the *General Help screen*. 
F10	The <F10> key allows you to save any changes you have made and exit Setup. Press the <F10> key to save your changes. The following screen will appear:  Press the <Enter> key to save the configuration and exit. You can also use the <Arrow> key to select *Cancel* and then press the <Enter> key to abort this function and return to the previous screen.
ESC	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes. The following screen will appear:  Press the <Enter> key to discard changes and exit. You can also use the <Arrow> key to select *Cancel* and then press the <Enter> key to abort this function and return to the previous screen.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

Main Menu

When user enters the Setup Utility, user see the Main setup screen. User can always return to the Main setup screen by selecting the *Main* tab. There are two Main Setup options. They are described in this section.

System Date / Time

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

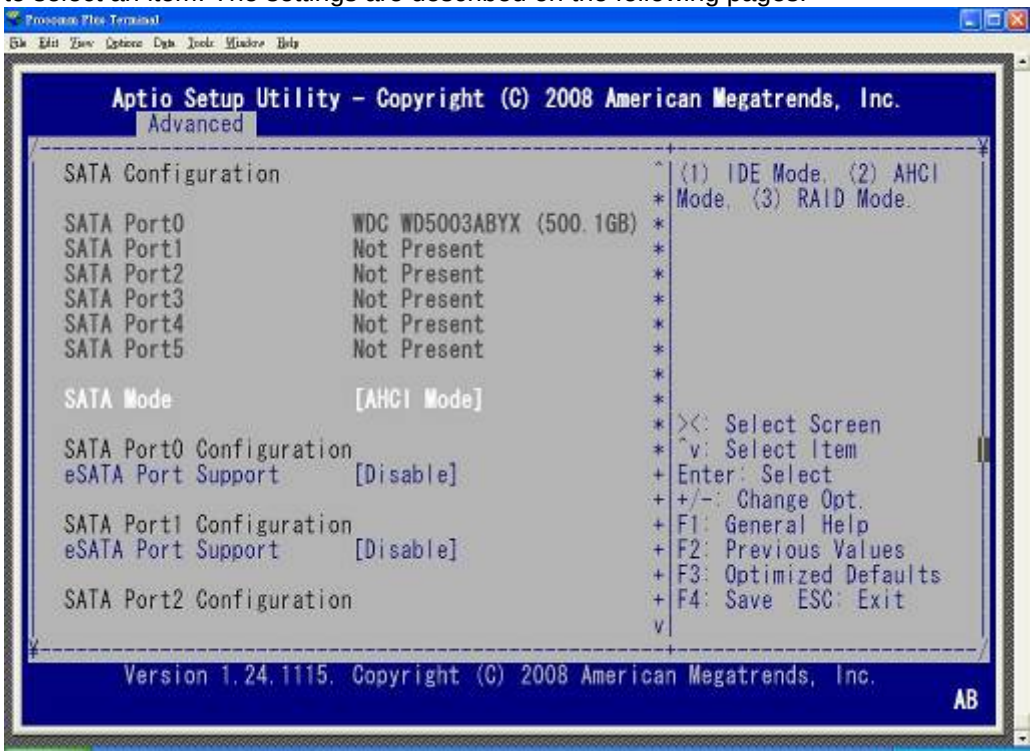
➢ Advanced BIOS Setup

Select the *Advanced* tab from the setup screen to enter the Advanced BIOS Setup screen. Select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. It will display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.

Aptio Setup Utility – Copyright (C) 2008 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Enabled]
Launch Storage OpROM [Enabled]
> PCI Subsystem Settings
> ACPI Settings
> Trusted Computing
> CPU Configuration
> Runtime Error Logging
> SATA Configuration
> USB Configuration
> Info Report Configuration
> Super IO Configuration
> H/W Monitor
> Serial Port Console Redirection
Enable or Disable Boot Option for Legacy Network Devices.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
Version 1.24.1115. Copyright (C) 2008 American Megatrends, Inc.
AB

➢ SATA Configuration Setup

From the IDE Configuration screen, press <Enter> to access the sub menu. Use the up and down <Arrow> keys to select an item. The settings are described on the following pages.



➢ SUPER IO CONFIGURATION

Super IO Configuration

Use this screen to select options for the Super I/O settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.

Aptio Setup Utility – Copyright (C) 2008 American Megatrends, Inc.
Advanced
Super IO Configuration
Super IO Chip Winbond W83627DHG
> Serial Port 0 Configuration
> Serial Port 1 Configuration
Set Parameters of Serial Port 0 (COMA)
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
Version 1.24.1115. Copyright (C) 2008 American Megatrends, Inc.
AB

➢ SERIAL PORT CONSOLE REDIRECTION

Serial Port Console Redirection

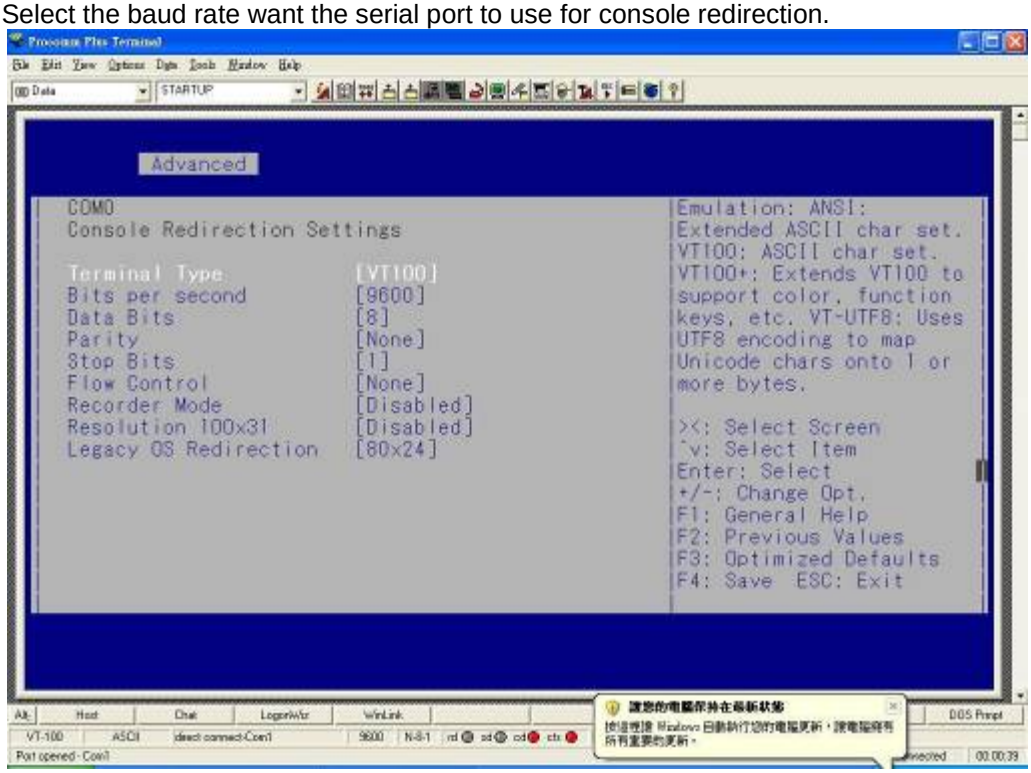
Use this screen to select options for the Serial Port Console Redirection. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.

Console Redirection [Enabled] Default COM0

Disable or enable the BIOS remote access feature here.

Console Redirection Setting

Select the baud rate want the serial port to use for console redirection.


Advanced
COM0
Console Redirection Settings
Terminal Type [VT100]
Bits per second [9600]
Data Bits [8]
Parity [None]
Stop Bits [1]
Flow Control [None]
Recorder Mode [Disabled]
Resolution 100x31 [Disabled]
Legacy OS Redirection [80x24]
Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit

➢ USB Configuration

Use this screen to select options for the USB Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.

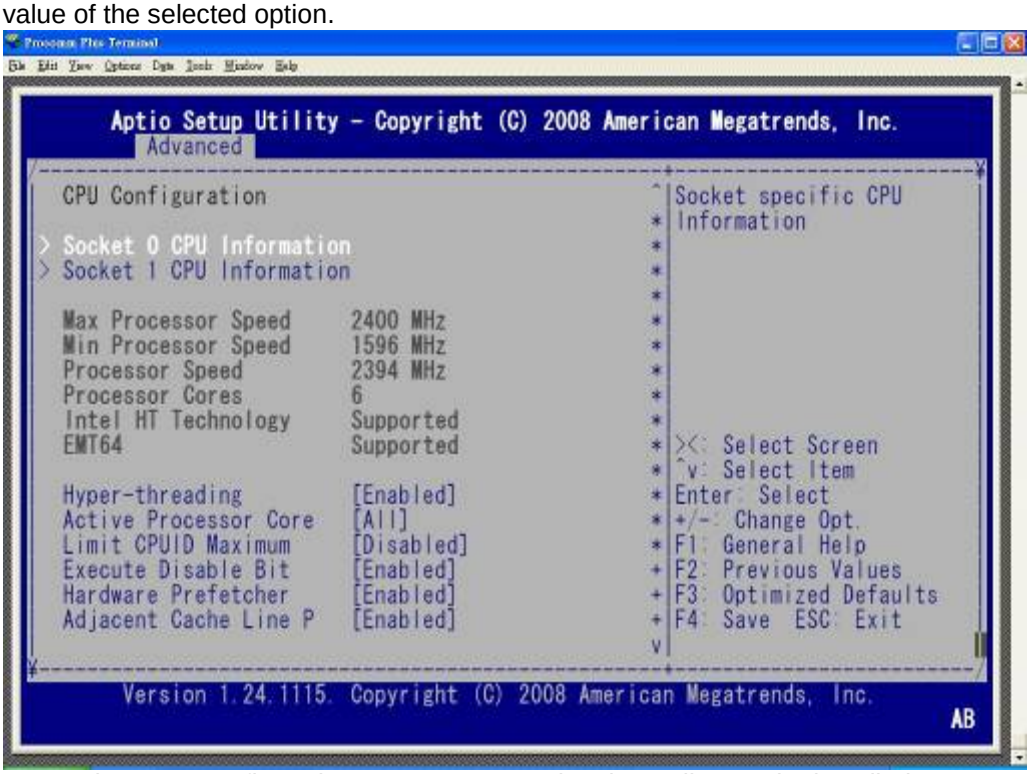
Aptio Setup Utility – Copyright (C) 2008 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Keyboard, 1 Mouse
Legacy USB Support [Enabled]
EHCI Hand-off [Enabled]
Device Reset timeout [20 sec]
Controller Timeout [20 sec]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
Version 1.24.1115. Copyright (C) 2008 American Megatrends, Inc.
AB

Legacy USB Support

Legacy USB Support refers to the USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB drivers loaded on the system. Set this value to enable or disable the Legacy USB Support. The Optimal and Fail-Safe default setting is *Disabled*.

➢ CPU Configuration

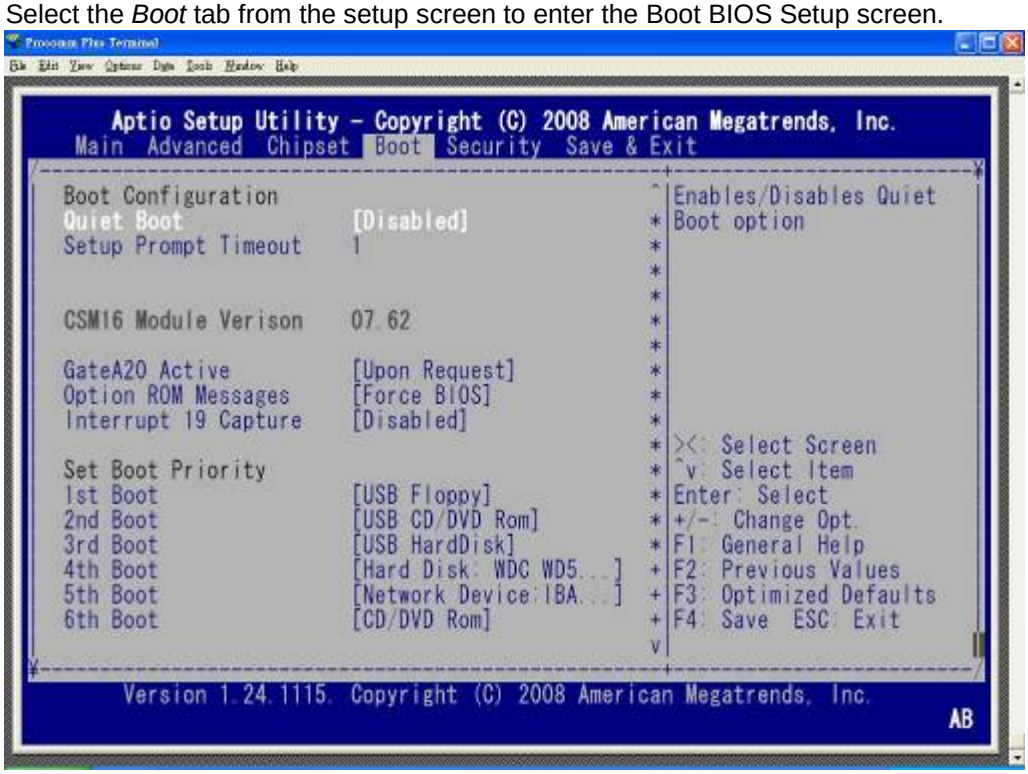
Use this screen to select options for the CPU Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



Note: The CPU Configuration setup screen varies depending on the installed processor.

➢ Boot Settings

Select the *Boot* tab from the setup screen to enter the Boot BIOS Setup screen.


Aptio Setup Utility – Copyright (C) 2008 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Enables/Disables Quiet Boot option
Quiet Boot [Disabled]
Setup Prompt Timeout 1
CSM16 Module Verison 07.62
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
Interrupt 19 Capture [Disabled]
Set Boot Priority
1st Boot [USB Floppy]
2nd Boot [USB CD/DVD Rom]
3rd Boot [USB HardDisk]
4th Boot [Hard Disk: WDC WD5...]
5th Boot [Network Device:IBA...]
6th Boot [CD/DVD Rom]
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
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AB

➢ BOOT SETTINGS CONFIGURATION SCREEN

Boot Settings Configuration

Use this screen to select options for the Boot Settings Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.

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Quiet Boot

Set this value to allow the boot up screen options to be modified between POST messages or OEM logo. The Optimal and Fail-Safe default setting is *Enabled.*

Option ROM Display Mode

Set this option to display add-on ROM (read-only memory) messages. The Optimal and Fail-Safe default setting is *Force BIOS*. An example of this is a SCSI BIOS or VGA BIOS.

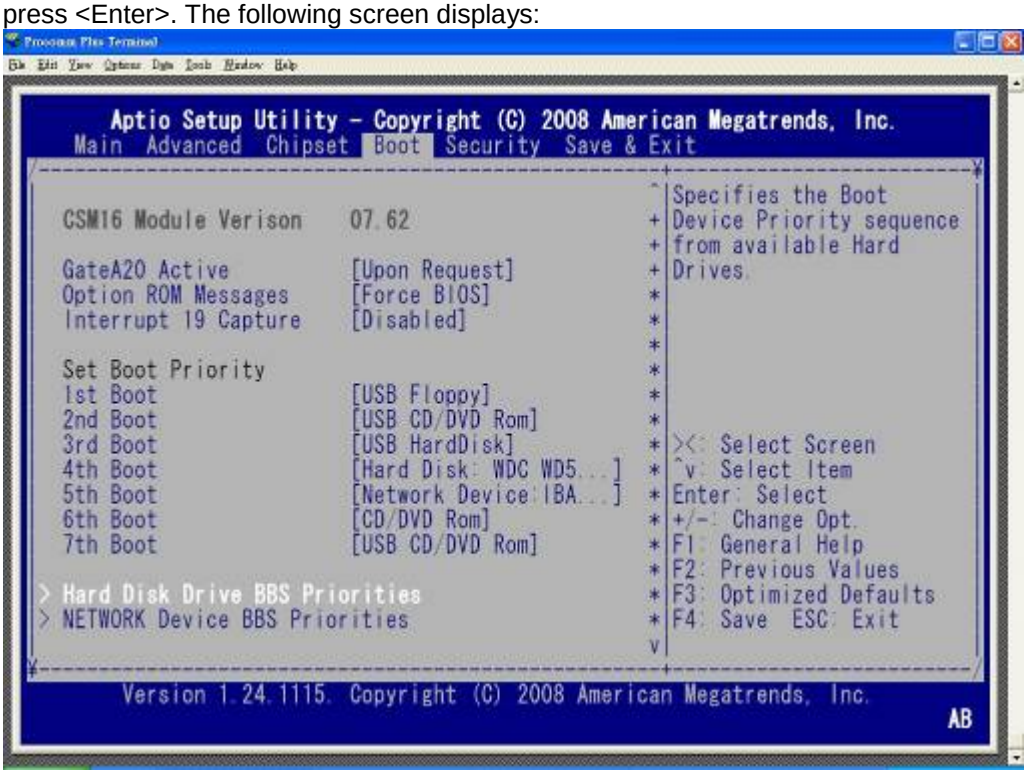
Interrupt 19 Capture

Set this value to allow option ROMs such as network controllers to trap BIOS interrupt 19.

➢ BOOT DEVICE PRIORITY

Hard Disk Boot Device Priority

Use this screen to specify the order in which the system checks for the device to boot from. To access this screen, select Boot Device Priority on the Boot Setup screen and press <Enter>. The following screen displays: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Main Advanced Chipset Boot Security Save & Exit
CSM16 Module Verison 07.62
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
Interrupt 19 Capture [Disabled]
Set Boot Priority
1st Boot [USB Floppy]
2nd Boot [USB CD/DVD Rom]
3rd Boot [USB HardDisk]
4th Boot [Hard Disk: WDC WD5...]
5th Boot [Network Device:IBA...]
6th Boot [CD/DVD Rom]
7th Boot [USB CD/DVD Rom]
> Hard Disk Drive BBS Priorities
> NETWORK Device BBS Priorities
Specifies the Boot Device Priority sequence from available Hard Drives.
><: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save ESC: Exit
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➢ Exit Menu

Select the *Exit* tab from the setup screen to enter the Exit BIOS Setup screen. Display an Exit BIOS Setup option by highlighting it using the <Arrow> keys. All Exit BIOS Setup options are described in this section. The Exit BIOS Setup screen is shown below.

Saving Changes and Exit
When completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Exit Saving Changes from the Exit menu and press <Enter>.

Discard Changes and Exit
Select this option to quit Setup without making any permanent changes to the system configuration. Select Exit Discarding Changes from the Exit menu and press <Enter>.

Discard Changes
Select Discard Changes from the Exit menu and press <Enter>.

Restore Defaults
Automatically sets all Setup options to a complete set of default settings when select this option. Select Load Optimal Defaults from the Exit menu and press <Enter>.